

1-23. (CANCELED)

24. (NEW) A security system for a protected object, the system comprising a security controller and a plurality of signal transmitters associated with the protected object, and

a portable transponder, arranged in use to receive a challenge signal, from said transmitters and to transmit in response signal in response thereto,

wherein the challenge signal comprises vector information relating to the direction of a magnetic field generated by each of said transmitters and wherein comparator means are provided for carrying out a comparison between said vector information and a vector map of an area associated with the protected object to determine the position of the transponder in relation to the protected object and wherein the security controller is arranged to perform a security function depending on the comparison.

25. (NEW) The security system according to claim 24, wherein the vector information comprises the relative directions of at least a component of the signals from the respective transmitters.

26. (NEW) The security system according to claim 24, wherein the vector information comprises the relative strengths of at least a component of the signals from the respective transmitters.

27. (NEW) The security system according to claim 24, wherein the transponder is arranged to relay said vector information to the security controller and the security controller is arranged to determine from the vector information the position of the transponder in relation to the protected object.

28. (NEW) The security system according to claim 24, wherein the transponder is arranged to determine from the vector information its position in relation to the protected object and to vary its response accordingly.

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29. (NEW) The security system according to claim 24, wherein the transmitters are arranged in groups, each group comprising at least two transmitters (A1, A2) located substantially together in different orientations.

30. (NEW) The security system according to claim 24, wherein the challenge signal comprises a plurality of components from different transmitters and the relative strengths of the components within the signal is arranged to vary with time during transmission of the challenge signal.

31. (NEW) The signal system according to claim 24, wherein the transponder comprises a plurality of sensors arranged to detect different components of the challenge signal.

32. (NEW) The security system according to claim 31, wherein said components are substantially mutually orthogonal.

33. (NEW) The security system according to claim 31, wherein the transponder further comprises a calibration transmitter arranged to transmit a signal at a known orientation relative to said sensors so as to enable calibration of the sensors.

34. (NEW) The security system according to claim 24, wherein the object is a vehicle and the security function comprises allowing access to the vehicle.

35. (NEW) The security system according to claim 34 further comprising a plurality of sensors each associated with respective closure of the vehicle, the security controller is arranged to issue the challenge signal in response to an attempt by a user to open one of the closures.

36. (NEW) The system according to claim 24, wherein the object is a vehicle and the security function comprises enabling the vehicle to start.

37. (NEW) A security system for a protected object, the security system comprising:

- a plurality of signal transmitters and

- a security controller

- associated with the protected object,

- the security controller directing the transmitters to transmit a plurality of corresponding challenge signals, and

- a portable transponder, including

- a plurality of orthogonally oriented and directionally sensitive sensors for receiving each of the challenge signals and detecting a corresponding plurality of vector components of each challenge signal,

- the transponder operating in response to each challenge signal for extracting the vector components of the challenge signal and transmitting the vector components of each challenge signal to the security controller in a corresponding response signal,

- the security controller being in response to each response signal for

determining a corresponding vector between the transponder and the signal transmitter of the corresponding challenge signal, and

determining from the vectors the position of the transponder with respect to the signal transmitters.

38. (NEW) The security system according to claim 37, wherein the vector components comprise the relative strengths of the challenge signals along a plurality of axes defined by the orthogonally oriented sensors.

39. (NEW) The security system according to claim 37, wherein the transmitters are arranged in groups, each group comprising at least two transmitters (A1, A2) located substantially together in different orientations.

40. (NEW) The security system according to claim 37, wherein the challenge signal comprises a plurality of components from different transmitters and the relative strengths of the components within the signal is arranged to vary with time during transmission of the challenge signal.

41. (NEW) The security system according to claim 37, wherein the transponder further comprises a calibration transmitter arranged to transmit a signal at a known orientation relative to said sensors so as to enable calibration of the sensors.

42. (NEW) The security system according to claim 37, wherein the object is a vehicle and the security function comprises allowing access to the vehicle.

43. (NEW) The security system according to claim 37 further comprising a plurality of sensors each associated with respective closure of the vehicle, the security controller is arranged to issue the challenge signal in response to an attempt by a user to open one of the closures.

44. (NEW) The system according to claim 37, wherein the object is a vehicle and the security function comprises enabling the vehicle to start.